Field Review of the Draft *K-12 Grade Span Expectations (GSEs) in Engineering and Technology*

Please Note:

Please return information and comments by mail or e-mail to:

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FAX: 401-222-6033
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NOTE: You may submit a compilation of district teachers' comments and/or individual comments by attachment electronically to Science and Technology Specialists
Peter McLaren at peter.mclaren@ride.ri.gov
or
Linda A. Jzyk at linda.jzyk@ride.ri.gov

Any questions regarding the Field Review process may be directed to:

Linda A. Jzyk (linda.jzyk@ride.ri.gov) at 222-8473 or
Peter McLaren (peter.mclaren@ride.ri.gov) at 222-8454.

Field Review of the
Draft K-12 Grade Span Expectations (GSEs) in Engineering and Technology

Directions:

1) Begin the review process with the grade level(s) with which you are most familiar. There are three grade spans that will be used for local assessment (K-4, 5-8, & 9-12).

2) Complete the Reviewer Information form found on page 2.

3) Read "*About the Draft Rhode Island K-12 Grade Span Expectations in Engineering and Technology"*in the Appendix of this document to understand how the draft engineering and technology (E & T) GSEs were developed; the format of the document; and, the relationships between the Statements of Enduring Knowledge (EK), the local Assessment Targets, the cross-grade span Stems and the GSEs.

4) Read the following questions which form the basis for this field review document:

> **Question 1***: Is the E & T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment?*
>
> **Question 2:** *Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.*
>
> **Question 3**: *Is the E & T GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?*
>
> **Question 4:** *Does the set of E & T GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?*
>
> Question 5: *What engineering and technology content and skills are missing in these draft E & T GSEs? Where are there gaps in content and skills? This information is most essential for developing E & T GSEs for local curriculum, instruction and assessment?*

5) Locate the grade span you are reviewing in the draft E & T Engineering and Technology GSEs document. To help specify the E & T GSE on the review packet, the initial portion of the GSE as listed in the GSE document, has been written next to the GSE number in the review packet.

7) Work through questions 1, 2, and 3 for each E & T GSE within that grade span. Then answer questions 4 and 5 about the set of E & T GSEs within the Statements of Enduring Knowledge.

Notice there is a place to code a response to each question and a place to provide comments.

Field Review
Draft *Rhode Island K-12 Grade Span Expectations in Engineering and Technology*
Individual Reviewer Information

Name: _____

District/Organization: _____

School or Other: _____

Preferred Telephone Number: _____

E-mail Address: _____

Position:_____

Grade level and/or course(s) taught:

_____

_____

Number of years in that position: _____

Certification(s):

_____ _____

_____ _____

Name or description of engineering and technology program, curriculum and/ or textbook in use:

_____

_____

Participation on other district and statewide teams
(e.g. Science GSE development team, district curriculum committee, school improvement team, peer review team)

_____

_____

_____

Question 1: Clarity of E &T GSE
Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

Statement of Enduring Knowledge
ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (K-4)
Demonstrate and identify reasons for the development of technology and its effects on humankind.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET1.1 (K-2) Students demonstrate an understanding of the nature of technology by:		
1a. investigating life without current technology…	○	○
1b. describing how technology affects…	○	○
1c. differentiating between needs/wants, helpful/ harmful…	○	○
ET1.1 (3-4) Students demonstrate an understanding of the nature of technology by:		
1a. comparing and contrasting life with and without current technology…	○	○
1b. recognizing that technology has positive and negative…	○	○
1c. identifying natural vs. human-made objects…	○	○

Comments

Local Assessment Target
ET1.2 (K-4)
Discuss and define technology and its relationship to the natural and designed (human-made) world in the local community.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET1.2 (K-2) Students demonstrate an understanding of the need for technology by:		
2a. defining technology as something that makes life easier…	○	○
2b. discussing the purpose of technology…	○	○
ET1.2 (3-4) Students demonstrate an understanding of the need for technology by:		
2a. defining technology as any process or invention that affects society	○	○
2b. discussing the purpose of technology…	○	○

Comments

Question 1: Clarity of E &T GSE
Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.1 (K-4)
Explore and recognize the attributes of the design process.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET2.1 (K-2) Students demonstrate an understanding of the attributes of the design process by:		
1a. asking questions, making observations …	○	○
1b. exploring solutions to a problem…	○	○
1c. completing tasks cooperatively…	○	○
ET2.1 (3-4) Students demonstrate an understanding of the attributes of the design process by:		
1a. defining a problem and expressing…	○	○
1b. solving problems through the creation of design…	○	○
1c. identifying the characteristics of being an effective team	○	○

Comments

Local Assessment Target
ET2.2 (K-4)
Explore and recognize basic technological products and systems, as well as their tools.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET2.2 (K-2) Students demonstrate an understanding of technological products and systems by:		
2a. identifying and safely using…	○	○
2b. collecting and using information…	○	○
2c. exploring how things work	○	○
2d. exploring the properties…	○	○
ET2.2 (3-4) Students demonstrate an understanding of tehnological products and systems by:		
2a. identifying and safely using …	○	○
2b. using information to identify patterns…	○	○
2c. following step by step procedures…	○	○
2d. identifying the effects of technology…	○	○

Comments

Question 1: Clarity of E &T GSE
Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.3 (K-4)
Explore the processes of research and development, invention and innovation, experimentation, and troubleshooting in planning practical solutions to problems.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET2.3 (K-2) Students demonstrate an understanding of effective design by:		
3a. recognizing there are steps to solving a problem	○	○
3b. experimenting / exploring with various materials …	○	○
3c. asking questions and making observations ….	○	○
3d. comparing and contrasting various design …	○	○
ET2.3 (3-4) Students demonstrate an understanding of effective design by:		
3a. exploring the process of solving…	○	○
3b. using age-appropriate construction materials to build ….	○	○
3c. testing, troubleshooting, and evaluating ….	○	○
3d. documenting the advantages and disadvantages ….	○	○

Comments

Question 1: Clarity of E &T GSE
Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)

* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

Local Assessment Target
ET3.1 (K-4)
Recognize that there are various areas in engineering and technology.

Comments

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET3.1 (K-2) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. identifying community workers in these areas.	○	○
1b. making connections between these different areas….	○	○
ET3.1 (3-4) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. identifying responsibilities of community workers …	○	○
1b. specifying and explaining the connections …	○	○

Local Assessment Target
ET3.2 (K-4)
Select and utilize appropriate tools to measure, design, and implement specific technologies.

Comments

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET3.2 (K-2) Students demonstrate an understanding of selecting appropriate tools by:		
2a. recognizing that there are specialized tools …	○	○
2b. experimenting with different tools for tasks …	○	○
ET3.2 (3-4) Students demonstrate an understanding of selecting appropriate tools by:	○	○
2a. identifying characteristics of appropriate …	○	○
2b. experimenting and selecting the optimal tool…		

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (K-4)
Demonstrate and identify reasons for the development of technology and its effects on humankind.

Comments

E & T GSE	Differences Clear	Differences Not Clear
ET1.1 (K-2) Students demonstrate an understanding of the nature of technology by:		
1a. investigating life without current technology…	○	○
1b. describing how technology affects…	○	○
1c. differentiating between needs/wants, helpful/ harmful…	○	○
ET1.1 (3-4) Students demonstrate an understanding of the nature of technology by:		
1a. comparing and contrasting life with and without current technology…	○	○
1b. recognizing that technology has positive and negative…	○	○
1c. identifying natural vs. human-made objects…	○	○

Local Assessment Target
ET1.2 (K-4)
Discuss and define technology and its relationship to the natural and designed (human-made) world in the local community.

Comments

E & T GSE	Differences Clear	Differences Not Clear
ET1.2 (K-2) Students demonstrate an understanding of the need for technology by:		
2a. defining technology as something that makes life easier…	○	○
2b. discussing the purpose of technology…	○	○
ET1.2 (3-4) Students demonstrate an understanding of the need for technology by:		
2a. defining technology as any process or invention that affects society	○	○
2b. discussing the purpose of…	○	○

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET2.1 (K-4)
Explore and recognize the attributes of the design process.

Comments

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET2.1 (K-2) Students demonstrate an understanding of the attributes of the design process by:		
1a. asking questions, making observations …	○	○
1b. exploring solutions to a problem…	○	○
1c. completing tasks cooperatively…	○	○
ET2.1 (3-4) Students demonstrate an understanding of the attributes of the design process by:		
1a. defining a problem and expressing…	○	○
1b. solving problems through the creation of design…	○	○
1c. identifying the characteristics of being an effective team	○	○

Local Assessment Target
ET2.2 (K-4)
Explore and recognize basic technological products and systems, as well as their tools.

Comments

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET2.2 (K-2) Students demonstrate an understanding of technological products and systems by:	○	○
2a. identifying and safely using…	○	○
2b. collecting and using information…	○	○
2c. exploring how things work	○	○
2d. exploring the properties…	○	○
ET2.2 (3-4) Students demonstrate an understanding of tehnological products and systems by:		
2a. identifying and safely using …	○	○
2b. using information to identify patterns…	○	○
2c. following step by step procedures…	○	○
2d. identifying the effects of technology…	○	○

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.3 (K-4)
Explore the processes of research and development, invention and innovation, experimentation, and troubleshooting in planning practical solutions to problems.

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET2.3 (K-2) Students demonstrate an understanding of effective design by:		
3a. recognizing there are steps to solving a problem	○	○
3b. experimenting / exploring with various materials …	○	○
3c. asking questions and making observations ….	○	○
3d. comparing and contrasting various design …	○	○
ET2.3 (3-4) Students demonstrate an understanding of effective design by:		
3a. exploring the process of solving…	○	○
3b. using age-appropriate construction materials to build ….	○	○
3c. testing, troubleshooting, and evaluating ….	○	○
3d. documenting the advantages and disadvantages ….	○	○

Comments

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)
* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

Local Assessment Target
ET3.1 (K-4)
Recognize that there are various areas in engineering and technology.

E & T GSE	Differences Clear	Differences Not Clear
ET3.1 (K-2) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. identifying community workers in these areas.	○	○
1b. making connections between these different areas….	○	○
ET3.1 (3-4) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. identifying responsibilities of community workers …	○	○
1b. specifying and explaining the connections …	○	○

Comments

Local Assessment Target
ET3.2 (K-4)
Select and utilize appropriate tools to measure, design, and implement specific technologies.

E & T GSE	Differences Clear	Differences Not Clear
ET3.2 (K-2) Students demonstrate an understanding of selecting appropriate tools by:		
2a. recognizing that there are specialized tools …	○	○
2b. experimenting with different tools for tasks …	○	○
ET3.2 (3-4) Students demonstrate an understanding of selecting appropriate tools by:		
2a. identifying characteristics of appropriate …	○	○
2b. experimenting and selecting the optimal tool…	○	○

Comments

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge
ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (K-4)
Demonstrate and identify reasons for the development of technology and its effects on humankind.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET1.1 (K-2) Students demonstrate an understanding of the nature of technology by:			
1a. investigating life without current technology…	○	○	○
1b. describing how technology affects…	○	○	○
1c. differentiating between needs/wants, helpful/ harmful…	○	○	○
ET1.1 (3-4) Students demonstrate an understanding of the nature of technology by:			
1a. comparing and contrasting life with and without current technology…	○	○	○
1b. recognizing that technology has positive and negative…	○	○	○
1c. identifying natural vs. human-made objects…	○	○	○

Local Assessment Target
ET1.2 (K-4)
Discuss and define technology and its relationship to the natural and designed (human-made) world in the local community.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET1.2 (K-2) Students demonstrate an understanding of the need for technology by:			
2a. defining technology as something that makes life easier…	○	○	○
2b. discussing the purpose of technology…	○	○	○
ET1.2 (3-4) Students demonstrate an understanding of the need for technology by:			
2a. defining technology as any process or invention that affects society	○	○	○
2b. discussing the purpose of technology…	○	○	○

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.1 (K-4)
Explore and recognize the attributes of the design process.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET2.1 (K-2) Students demonstrate an understanding of the attributes of the design process by:			
1a. asking questions, making observations …	○	○	○
1b. exploring solutions to a problem…	○	○	○
1c. completing tasks cooperatively…	○	○	○
ET2.1 (3-4) Students demonstrate an understanding of the attributes of the design process by:			
1a. defining a problem and expressing…	○	○	○
1b. solving problems through the creation of design…	○	○	○
1c. identifying the characteristics of being an effective team	○	○	○

Local Assessment Target
ET2.2 (K-4)
Explore and recognize basic technological products and systems, as well as their tools.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET2.2 (K-2) Students demonstrate an understanding of technological products and systems by:			
2a. identifying and safely using…	○	○	○
2b. collecting and using information…	○	○	○
2c. exploring how things work	○	○	○
2d exploring the properties …	○	○	○
ET2.2 (3-4) Students demonstrate an understanding of tehnological products and systems by:			
2a. identifying and safely using …	○	○	○
2b. using information to identify patterns…	○	○	○
2c. following step by step procedures…	○	○	○
2d. identifying the effects of technology…	○	○	○

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.3 (K-4)
Explore the processes of research and development, invention and innovation, experimentation, and troubleshooting in planning practical solutions to problems.

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET2.3 (K-2) Students demonstrate an understanding of effective design by:			
3a. recognizing there are steps to solving a problem	○	○	○
3b. experimenting / exploring with various materials …	○	○	○
3c. asking questions and making observations ….	○	○	○
3d. comparing and contrasting various design …	○	○	○
ET2.3 (3-4) Students demonstrate an understanding of effective design by:			
3a. exploring the process of solving…	○	○	○
3b. using age-appropriate construction materials to build ….	○	○	○
3c. testing, troubleshooting, and evaluating ….	○	○	○
3d. documenting the advantages and disadvantages ….	○	○	○

Comments

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET3.1 (K-4)
Recognize that there are various areas in engineering and technology.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET3.1 (K-2) Students demonstrate an understanding of the areas of engineering and technology by:			
1a. identifying community workers in these areas.	○	○	○
1b. making connections between these different areas….	○	○	○
ET3.1 (3-4) Students demonstrate an understanding of the areas of engineering and technology by:			
1a. identifying responsibilities of community workers …	○	○	○
1b. specifying and explaining the connections …	○	○	○

Local Assessment Target
ET3.2 (K-4)
Select and utilize appropriate tools to measure, design, and implement specific technologies.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET3.2 (K-2) Students demonstrate an understanding of selecting appropriate tools by:			
2a. recognizing that there are specialized tools …	○	○	○
2b. experimenting with different tools for tasks …	○	○	○
ET3.2 (3-4) Students demonstrate an understanding of selecting appropriate tools by:			
2a. identifying characteristics of appropriate …	○	○	○
2b. experimenting and selecting the optimal tool…	○	○	○

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ **No ○**

Statement of Enduring Knowledge

ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (K-4)
Demonstrate and identify reasons for the development of technology and its effects on humankind.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET1.1 (K-2) Students demonstrate an understanding of the nature of technology by:		
1a. investigating life without current technology…	○	○
1b. describing how technology affects…	○	○
1c. differentiating between needs/wants, helpful/ harmful…	○	○
ET1.1 (3-4) Students demonstrate an understanding of the nature of technology by:		
1a. comparing and contrasting life with and without current technology…	○	○
1b. recognizing that technology has positive and negative…	○	○
1c. identifying natural vs. human-made objects…	○	○

Local Assessment Target
ET1.2 (K-4)
Discuss and define technology and its relationship to the natural and designed (human-made) world in the local community.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET1.2 (K-2) Students demonstrate an understanding of the need for technology by:		
2a. defining technology as something that makes life easier…	○	○
2b. discussing the purpose of technology…	○	○
ET1.2 (3-4) Students demonstrate an understanding of the need for technology by:		
2a. defining technology as any process or invention that affects society…	○	○
2b. discussing the purpose of technology…	○	○

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET2.1 (K-4)
Explore and recognize the attributes of the design process.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET2.1 (K-2) Students demonstrate an understanding of the attributes of the design process by:		
1a. asking questions, making observations…	○	○
1b. exploring solutions to a problem…	○	○
1c. completing tasks cooperatively…	○	○
ET2.1 (3-4) Students demonstrate an understanding of the attributes of the design process by:		
1a. defining a problem and expressing…	○	○
1b. solving problems through the creation of design…	○	○
1c. identifying the characteristics of being an effective team	○	○

Local Assessment Target
ET2.2 (K-4)
Explore and recognize basic technological products and systems, as well as their tools.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET2.2 (K-2) Students demonstrate an understanding of technological products and systems by:		
2a. identifying and safely using…	○	○
2b. collecting and using information…	○	○
2c. exploring how things work	○	○
2d. exploring the properties …	○	○
ET2.2 (3-4) Students demonstrate an understanding of tehnological products and systems by:		
2a. identifying and safely using …	○	○
2b. using information to identify patterns…	○	○
2c. following step by step procedures…	○	○
2d. identifying the effects of technology…	○	○

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target

ET2.3 (K-4)

Explore the processes of research and development, invention and innovation, experimentation, and troubleshooting in planning practical solutions to problems.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET2.3 (K-2) Students demonstrate an understanding of effective design by:		
3a. recognizing there are steps to solving a problem	○	○
3b. experimenting / exploring with various materials …	○	○
3c. asking questions and making observations ….	○	○
3d. comparing and contrasting various design …	○	○
ET2.3 (3-4) Students demonstrate an understanding of effective design by:		
3a. exploring the process of solving…	○	○
3b. using age-appropriate construction materials to build ….	○	○
3c. testing, troubleshooting, and evaluating ….	○	○
3d. documenting the advantages and disadvantages ….	○	○

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)

* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

ET3.1 (K-4)

Recognize that there are various areas in engineering and technology.

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET3.1 (K-2) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. identifying community workers in these areas.	○	○
1b. making connections between these different areas….	○	○
ET3.1 (3-4) Students demonstrate an understanding of the areas of engineering and technology by:		○
1a. identifying responsibilities of community workers …	○	○
1b. specifying and explaining the connections …	○	○

Comments

Local Assessment Target

ET3.2 (K-4)

Select and utilize appropriate tools to measure, design, and implement specific technologies.

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET3.2 (K-2) Students demonstrate an understanding of selecting appropriate tools by:		
2a. recognizing that there are specialized tools …	○	○
2b. experimenting with different tools for tasks …	○	○
ET3.2 (3-4) Students demonstrate an understanding of selecting appropriate tools by:		
2a. identifying characteristics of appropriate …	○	○
2b. experimenting and selecting the optimal tool…	○	○

Comments

Question #5: What engineering and technology content and skills are missing in these draft E & T GSEs? Where are there gaps in content and skills? This information is most essential for developing E & T GSEs for local curriculum, instruction and assessment.	
Relevant EK and GSEs **(Identify by EK and GSE number - ex. E&T 1, 1a)**	**Content/Concepts/Skills that need to be included** **(Please provide as much detail as possible)**

END OF GRADE SPAN K-4

Question 1: Clarity of E &T GSE
Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

Statement of Enduring Knowledge
ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (5-8)
Compare, contrast, and provide evidence of how technology influences history and impacts society.

Comments

E & T GSE	Curriculum/ Instruction	Local Assessment
ET1.1 (5-6) Students demonstrate an understanding of the impact of technology by:		
1a. researching and displaying how historical events ….	○	○
1b. listing and describing the importance of technology in daily life.	○	○
1c. evaluating the many and varying uses of technology…	○	○
ET1.1 (7-8) Students demonstrate an understanding of the impact of technology by:		
1a. describing how technological advances affect society…	○	○
1b. comparing and contrasting the social and economic concerns….	○	○
1c. analyzing the use of technology within various cultures …	○	○

Local Assessment Target
ET1.2 (5-8)
Describe and demonstrate the effects of technological systems to humankind on a national scale.

Comments

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET1.2 (5-6) Students demonstrate an understanding of the outcomes of technology by:		
2a. making connections between technological inventions…	○	○
2b. researching and analyzing the effects on humankind and the environment …	○	○
ET1.2 (7-8) Students demonstrate an understanding of the outcomes of technology by:		
2a. designing or improving a technological product and …	○	○
2b. associating and illustrating the effects of particular technological s …	○	○

Question 1: Clarity of E &T GSE
Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.1 (5-8)
Utilize the attributes of the design process to solve a real world problem.

Comments

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET2.1 (5-6) Students demonstrate an understanding of the attributes of the design process by:		
1a. defining a problem that addresses a scenario ….	○	○
1b. selecting an appropriate design solution for a given scenario or task.	○	○
1c. explaining what makes an effective design…	○	○
ET2.1 (7-8) Students demonstrate an understanding of the attributes of the design process by:		
1a. defining a problem that addresses a scenario …	○	○
1b. selecting and justifying an appropriate design solution …	○	○
1c. fulfilling a specific function as a team member …	○	○

Local Assessment Target
ET2.2 (5-8)
Use and maintain technological products and systems, as well as their tools.

Comments

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET2.2 (5-6) Students demonstrate an understanding of technological products and systems by:		
2a. safely using the required tools …	○	○
2b. incorporating assigned materials …	○	○
2c. using information to discover, diagnose and troubleshoot …	○	○
2d. interpreting and evaluating the …	○	○
ET2.2 (7-8) Students demonstrate an understanding of technological products and systems by:		
2a. explaining and safely using the required tools …	○	○
2b. incorporating information, proper material selection …	○	○
2c. using tools to diagnose, adjust, …	○	○
2d. interpreting and evaluating the …	○	○

Question 1: Clarity of E &T GSE

Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target

ET2.3 (5-8)

Utilize processes (i.e. research and development, invention and innovation, experimentation, and troubleshooting) in designs that use criteria and constraints leading to useful products and systems.

Comments

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET2.3 (5-6) **Students demonstrate an understanding of effective designs of products and systems by:**		
3a. formulating a process to solve a real world problem.	○	○
3b. utilizing materials provided to construct a working model …	○	○
3c. testing, troubleshooting, and evaluating an intermediate design …	○	○
3d. presenting their final working model for peer review and revision.	○	○
	○	○
ET2.3 (7-8) **Students demonstrate an understanding of effective designs of products and systems:**		
3a. formulating a process to solve …	○	○
3b. utilizing materials provided to construct a working model….	○	○
3c. testing, troubleshooting, and evaluating a complex design solution.	○	○
3d. presenting their documentation, revisions, and final working model…	○	○

Question 1: Clarity of E &T GSE
Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)

* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

Local Assessment Target
ET3.1 (5-8)
Explore the various areas in engineering and technology and their interconnections.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET3.1 (5-6) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. differentiating among the various engineering …	○	○
1b. researching the connections within these areas as they apply to …	○	○
ET3.1 (7-8) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. researching and defining the requirements of …	○	○
1b. evaluating the connections within these areas …	○	○

Comments

Local Assessment Target
ET3.2 (5-8)
Compare and contrast tools to measure, design, and implement specific technologies.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET3.2 (5-6) Students demonstrate an understanding of selecting appropriate tools by:		
2a. comparing and contrasting tools used for the same purpose across…	○	○
2b. researching and selecting the optimal tool for a given task…	○	○
ET3.2 (7-8) Students demonstrate an understanding of selecting appropriate tools by:		
2a. researching and explaining the evolution of key tool(s) …	○	○
2b. researching and selecting the optimal tool for a student-selected task…	○	○

Comments

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (5-8)
Compare, contrast, and provide evidence of how technology influences history and impacts society.

Comments

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET1.1 (5-6) Students demonstrate an understanding of the impact of technology by:		
1a. researching and displaying how historical events ….	○	○
1b. listing and describing the importance of technology in daily life.	○	○
1c. evaluating the many and varying uses of technology…	○	○
ET1.1 (7-8) Students demonstrate an understanding of the impact of technology by:		
1a. describing how technological advances affect society…	○	○
1b. comparing and contrasting the social and economic concerns….	○	○
1c. analyzing the use of technology within various cultures …	○	○

Local Assessment Target
ET1.2 (5-8)
Describe and demonstrate the effects of technological systems to humankind on a national scale.

Comments

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET1.2 (5-6) Students demonstrate an understanding of the outcomes of technology by:		
2a. making connections between technological inventions…	○	○
2b. researching and analyzing the effects on humankind and the environment …	○	○
ET1.2 (7-8) Students demonstrate an understanding of the outcomes of technology by:		
2a. designing or improving a technological product and …	○	○
2b. associating and illustrating the effects of particular technological …	○	○

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.1 (5-8)
Utilize the attributes of the design process to solve a real world problem.

Comments

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET2.1 (5-6) Students demonstrate an understanding of the attributes of the design process by:		
1a. defining a problem that addresses a scenario ….	○	○
1b. selecting an appropriate design solution for a given scenario or task.	○	○
1c. explaining what makes an effective design…	○	○
ET2.1 (7-8) Students demonstrate an understanding of the attributes of the design process by:		
1a. defining a problem that addresses a scenario …	○	○
1b. selecting and justifying an appropriate design solution …	○	○
1c. fulfilling a specific function as a team member …	○	○

Local Assessment Target
ET2.2 (5-8)
Use and maintain technological products and systems, as well as their tools.

Comments

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET2.2 (5-6) Students demonstrate an understanding of technological products and systems by:		
2a. safely using the required tools …	○	○
2b. incorporating assigned materials …	○	○
2c. using information to discover, diagnose and troubleshoot …	○	○
2d. interpreting and evaluating the …	○	○
ET2.2 (7-8) Students demonstrate an understanding of technological products and systems by:		
2a. explaining and safely using the required tools …	○	○
2b. incorporating information, proper material selection …	○	○
2c. using tools to diagnose, adjust, …	○	○
2d. interpreting and evaluating the …	○	○

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.3 (5-8)
Utilize processes (i.e. research and development, invention and innovation, experimentation, and troubleshooting) in designs that use criteria and constraints leading to useful products and systems.

E & T GSE	Differences Clear	Differences Not Clear
ET2.3 (5-6) Students demonstrate an understanding of effective designs of products and systems by:		
3a. formulating a process to solve a real world problem.	○	○
3b. utilizing materials provided to construct a working model …	○	○
3c. testing, troubleshooting, and evaluating an intermediate design …	○	○
3d. presenting their final working model for peer review and revision.	○	○
ET2.3 (7-8) Students demonstrate an understanding of effective designs of products and systems:		
3a. formulating a process to solve …	○	○
3b. utilizing materials provided to construct a working model….	○	○
3c. testing, troubleshooting, and evaluating a complex design solution.	○	○
3d. presenting their documentation, revisions, and final working model…	○	○

Comments

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)
* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

Local Assessment Target
ET3.1 (5-8)
Explore the various areas in engineering and technology and their interconnections.

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET3.1 (5-6) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. differentiating among the various engineering …	○	○
1b. researching the connections within these areas as they apply to …	○	○
ET3.1 (7-8) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. researching and defining the requirements of …	○	○
1b. evaluating the connections within these areas …	○	○

Comments

Local Assessment Target
ET3.2 (5-8)
Compare and contrast tools to measure, design, and implement specific technologies.

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET3.2 (5-6) Students demonstrate an understanding of selecting appropriate tools by:		
2a. comparing and contrasting tools used for the same purpose across…	○	○
2b. researching and selecting the optimal tool for a given task…	○	○
ET3.2 (7-8) Students demonstrate an understanding of selecting appropriate tools by:		
2a. researching and explaining the evolution of key tool(s) …	○	○
2b. researching and selecting the optimal tool for a student-selected task…	○	○

Comments

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (5-8)
Compare, contrast, and provide evidence of how technology influences history and impacts society.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET1.1 (5-6) Students demonstrate an understanding of the impact of technology by:			
1a. researching and displaying how historical events ….	○	○	○
1b. listing and describing the importance of technology in daily life.	○	○	○
1c. evaluating the many and varying uses of technology…	○	○	○
ET1.1 (7-8) Students demonstrate an understanding of the impact of technology by:			
1a. describing how technological advances affect society…	○	○	○
1b. comparing and contrasting the social and economic concerns….	○	○	○
1c. analyzing the use of technology within various cultures …	○	○	○

Local Assessment Target
ET1.2 (5-8)
Describe and demonstrate the effects of technological systems to humankind on a national scale.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET1.2 (5-6) Students demonstrate an understanding of the outcomes of technology by:			
2a. making connections between technological inventions…	○	○	○
2b. researching and analyzing the effects on humankind and the environment …	○	○	○
ET1.2 (7-8) Students demonstrate an understanding of the outcomes of technology by:			
2a. designing or improving a technological product and …	○	○	○
2b. associating and illustrating the effects of particular technological …	○	○	○

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.1 (5-8)
Utilize the attributes of the design process to solve a real world problem.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET2.1 (5-6) Students demonstrate an understanding of the attributes of the design process by:			
1a. defining a problem that addresses a scenario ….	○	○	○
1b. selecting an appropriate design solution for a given scenario or task.	○	○	○
1c. explaining what makes an effective design…	○	○	○
ET2.1 (7-8) Students demonstrate an understanding of the attributes of the design process by:			
1a. defining a problem that addresses a scenario …	○	○	○
1b. selecting and justifying an appropriate design solution …	○	○	○
1c. fulfilling a specific function as a team member …	○	○	○

Local Assessment Target
ET2.2 (5-8)
Use and maintain technological products and systems, as well as their tools.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET2.2 (5-6) Students demonstrate an understanding of technological products and systems by:			
2a. safely using the required tools …	○	○	○
2b. incorporating assigned materials …	○	○	○
2c. using information to discover, diagnose and troubleshoot …	○	○	○
2d. interpreting and evaluating the …	○	○	○
ET2.2 (7-8) Students demonstrate an understanding of technological products and systems by:			
2a. explaining and safely using the required tools …	○	○	○
2b. incorporating information, proper material selection …	○	○	○
2c. using tools to diagnose, adjust, …	○	○	○
2d. interpreting and evaluating the …	○	○	○

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.3 (5-8)
Utilize processes (i.e. research and development, invention and innovation, experimentation, and troubleshooting) in designs that use criteria and constraints leading to useful products and systems.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET2.3 (5-6) Students demonstrate an understanding of effective designs of products and systems by:			
3a. formulating a process to solve a real world problem.	○	○	○
3b. utilizing materials provided to construct a working model …	○	○	○
3c. testing, troubleshooting, and evaluating an intermediate design …	○	○	○
3d. presenting their final working model for peer review and revision.	○	○	○
ET2.3 (7-8) Students demonstrate an understanding of effective designs of products and systems:			
3a. formulating a process to solve …	○	○	○
3b. utilizing materials provided to construct a working model….	○	○	○
3c. testing, troubleshooting, and evaluating a complex design solution.	○	○	○
3d. presenting their documentation, revisions, and final working model…	○	○	○

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)

* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

Local Assessment Target
ET3.1 (5-8)
Explore the various areas in engineering and technology and their interconnections.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET3.1 (5-6) Students demonstrate an understanding of the areas of engineering and technology by:			
1a. differentiating among the various engineering …	○	○	○
1b. researching the connections within these areas as they apply to …	○	○	○
ET3.1 (7-8) Students demonstrate an understanding of the areas of engineering and technology by:			
1a. researching and defining the requirements of …	○	○	○
1b. evaluating the connections within these areas …	○	○	○

Local Assessment Target
ET3.2 (5-8)
Compare and contrast tools to measure, design, and implement specific technologies.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET3.2 (5-6) Students demonstrate an understanding of selecting appropriate tools by:			
2a. comparing and contrasting tools used for the same purpose across…	○	○	○
2b. researching and selecting the optimal tool for a given task…	○	○	○
ET3.2 (7-8) Students demonstrate an understanding of selecting appropriate tools by:			
2a. researching and explaining the evolution of key tool(s) …	○	○	○
2b. researching and selecting the optimal tool for a student-selected task…	○	○	○

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (5-8)
Compare, contrast, and provide evidence of how technology influences history and impacts society.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET1.1 (5-6) Students demonstrate an understanding of the impact of technology by:		
1a. researching and displaying how historical events ….	○	○
1b. listing and describing the importance of technology in daily life.	○	○
1c. evaluating the many and varying uses of technology…	○	○
ET1.1 (7-8) Students demonstrate an understanding of the impact of technology by:		
1a. describing how technological advances…	○	○
1b. comparing and contrasting the social and economic concerns….	○	○
1c. analyzing the use of technology within various cultures …	○	○

Local Assessment Target
ET1.2 (5-8)
Describe and demonstrate the effects of techno-logical systems to humankind on a national scale.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET1.2 (5-6) Students demonstrate an understanding of the outcomes of technology by:		
2a. making connections between technological inventions…	○	○
2b. researching and analyzing the effects on humankind and the environment …	○	○
ET1.2 (7-8) Students demonstrate an understanding of the outcomes of technology by:		
2a. designing or improving a technological product and …	○	○
2b. associating and illustrating the effects of particular technological …	○	○

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.1 (5-8)
Utilize the attributes of the design process to solve a real world problem.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET2.1 (5-6) Students demonstrate an understanding of the attributes of the design process by:		
1a. defining a problem that addresses a scenario ….	○	○
1b. selecting an appropriate design solution for a given scenario or task.	○	○
1c. explaining what makes an effective design…	○	○
	○	○
ET2.1 (7-8) Students demonstrate an understanding of the attributes of the design process by:		
1a. defining a problem that addresses a scenario …	○	○
1b. selecting and justifying an appropriate design solution …	○	○
1c. fulfilling a specific function as a team member …	○	○

Local Assessment Target
ET2.2 (5-8)
Use and maintain technological products and systems, as well as their tools.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET2.2 (5-6) Students demonstrate an understanding of technological products and systems by:		
2a. safely using the required tools …	○	○
2b. incorporating assigned materials …	○	○
2c. using information to discover, diagnose and troubleshoot …	○	○
2d. interpreting and evaluating the …	○	○
	○	○
ET2.2 (7-8) Students demonstrate an understanding of technological products and systems by:		
2a. explaining and safely using the required tools …	○	○
2b. incorporating information, proper material selection …	○	○
2c. using tools to diagnose, adjust, …	○	○
2d. interpreting and evaluating the …	○	○

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target

ET2.3 (5-8)

Utilize processes (i.e. research and development, invention and innovation, experimentation, and troubleshooting) in designs that use criteria and constraints leading to useful products and systems.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET2.3 (5-6) Students demonstrate an understanding of effective designs of products and systems by:		
3a. formulating a process to solve a real world problem.	○	○
3b. utilizing materials provided to construct a working model …	○	○
3c. testing, troubleshooting, and evaluating an intermediate design …	○	○
3d. presenting their final working model for peer review and revision.	○	○
ET2.3 (7-8) Students demonstrate an understanding of effective designs of products and systems:		
3a. formulating a process to solve …	○	○
3b. utilizing materials provided to construct a working model….	○	○
3c. testing, troubleshooting, and evaluating a complex design solution.	○	○
3d. presenting their documentation, revisions, and final working model…	○	○

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)

* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

Local Assessment Target
ET3.1 (5-8)
Explore the various areas in engineering and technology and their interconnections.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET3.1 (5-6) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. differentiating among the various engineering …	○	○
1b. researching the connections within these areas as they apply to …	○	○
ET3.1 (7-8) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. researching and defining the requirements of …	○	○
1b. evaluating the connections within these areas …	○	○

Local Assessment Target
ET3.2 (5-8)
Compare and contrast tools to measure, design, and implement specific technologies.

Comments

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
ET3.2 (5-6) Students demonstrate an understanding of selecting appropriate tools by:		
2a. comparing and contrasting tools used for the same purpose across…	○	○
2b. researching and selecting the optimal tool for a given task…	○	○
ET3.2 (7-8) Students demonstrate an understanding of selecting appropriate tools by:		
2a. researching and explaining the evolution of key tool(s) …	○	○
2b. researching and selecting the optimal tool for a student-selected task…	○	○

Question #5: What engineering and technology content and skills are missing in these draft E & T GSEs? Where are there gaps in content and skills? This information is most essential for developing E & T GSEs for local curriculum, instruction and assessment.	
Relevant EK and GSEs **(Identify by EK and GSE number - ex. E&T 1, 1a)**	**Content/Concepts/Skills that need to be included** **(Please provide as much detail as possible)**

END OF GRADE SPAN 5-8

Question 1: Clarity of E &T GSE
Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

Statement of Enduring Knowledge
ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (9-12)
Identify the factors affecting technological advances (e.g. social, economic, political, cultural, environmental) throughout history.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET1.1 (9-12) Students demonstrate an understanding of the influences of technology by:		
1a. analyzing factors related to the development…	○	○
1b. assessing the relationship between available resources …	○	○
1c. analyzing the evolution of factors affecting technological advances ….	○	○

Comments

Local Assessment Target
ET1.2 (9-12)
Analyze and explain advancements in technological systems and their impact on the world.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET1.2 (9-12) Students demonstrate an understanding of the impacts of technology by:		
2a. revising a current technological system and analyzing the global….	○	○
2b. modeling and evaluating the design of a technological system …	○	○

Comments

Question 1: Clarity of E &T GSE

Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.1 (9-12)
Evaluate the design and refine the design process used to solve a real world problem.

Comments

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET2.1 (9-12) Students demonstrate an understanding of the attributes of the design process by:		
1a. identifying in depth criteria and constraints by developing…	○	○
1b. evaluating and finalizing the most appropriate design solution …	○	○
1c. creating a team and assigning roles to team members…	○	○

Local Assessment Target
ET2.2 (9-12)
Incorporate technological products, systems and their tools to achieve design solutions.

Comments

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET2.2 (9-12) Students demonstrate an understanding of technological products and systems by:		
2a. selecting independently the proper tools …	○	○
2b. incorporating proper information, material selection…	○	○
2c. documenting, communicating, and evaluating processes …	○	○
2d. synthesizing information to develop possible solutions …	○	○

Question 1: Clarity of E &T GSE

Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target

ET2.3 (9-12)

Refine the processes of research and development, invention and innovation, experimentation, and troubleshooting for the purpose of achieving an optimal design solution.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET2.3 (9-12) **Students demonstrate an understanding of what is an optimal design solution by:**		
3a. formulating a process to solve a real world problem …	○	○
3b. choosing appropriate materials to construct …	○	○
3c. evaluating and refining a complex design solution..	○	○
3d. presenting comparative simulations/ prototypes and defending the selected solution.	○	○

Comments

Question 1: Clarity of E &T GSE
Is the E &T GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and local assessment? (Do I understand the expectations of student learning to implement appropriate classroom instruction/curriculum and assessment? If not, what aspect of the GSE needs further clarification? (e.g. clarify terminology, give examples, etc.)

ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)

* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

Local Assessment Target
ET3.1 (9-12)
Experience and implement the various areas in engineering and technology.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET3.1 (9-12) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. preparing a career portfolio of a …	○	○
1b. evaluating the connections within these areas …	○	○

Comments

Local Assessment Target
ET3.2 (9-12)
Evaluate the effectiveness of tools to measure, design, and implement specific technologies.

E & T GSE	**Curriculum/ Instruction**	**Local Assessment**
ET3.2 (9-12) Students demonstrate an understanding of selecting appropriate tools by:		
2a. evaluating the effectiveness of various tool(s) …	○	○
2b. developing or improving a tool …	○	○

Comments

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (9-12)
Identify the factors affecting technological advances (e.g. social, economic, political, cultural, environmental) throughout history.

ETS 1.1 (9-12) Students demonstrate an understanding of the influences of technology by:	**Differences Clear**	**Differences Not Clear**
1a. analyzing factors related to the development …	○	○
1b. assessing the relationship between available resources…	○	○
1c. analyzing the evolution of factors affecting technological advances…	○	○

Comments

Local Assessment Target
ET1.2 (9-12)
Analyze and explain advancements in technological systems and their impact on the world.

E & T GSE **ETS 1.1 (9-12) Students demonstrate an understanding of the impacts of technology by:**	**Differences Clear**	**Differences Not Clear**
2a. revising a current technological system and analyzing the global….	○	○
2b. modeling and evaluating the design of a technological system and its impact on humankind.	○	○

Comments

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.1 (9-12)
Evaluate the design and refine the design process used to solve a real world problem.

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET2.1 (9-12) Students demonstrate an understanding of the attributes of the design process by:		
1a. identifying in depth criteria and constraints by developing…	○	○
1b. evaluating and finalizing the most appropriate design solution …	○	○
1c. creating a team and assigning roles to team members…	○	○

Comments

Local Assessment Target
ET2.2 (9-12)
Incorporate technological products, systems and their tools to achieve design solutions.

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET2.2 (9-12) Students demonstrate an understanding of technological products and systems by:		
2a. selecting independently the proper tools …	○	○
2b. incorporating proper information, material selection…	○	○
2c. documenting, communicating, and evaluating processes …	○	○
2d. synthesizing information to develop possible solutions …	○	○

Comments

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.3 (9-12)
Refine the processes of research and development, invention and innovation, experimentation, and troubleshooting for the purpose of achieving an optimal design solution.

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET2.3 (9-12) Students demonstrate an understanding of what is an optimal design solution by:		
3a. formulating a process to solve a real world problem …	○	○
3b. choosing appropriate materials to construct …	○	○
3c. evaluating and refining a complex design solution..	○	○
3d. presenting comparative simulations/ prototypes and defending the selected solution.	○	○

Comments

Question 2: Clarity of Grade Span Differences
Are the differences between the E & T GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.
NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This suggests that the same content addressed in later grades should be of developmentally appropriate increased difficulty or depth.

Statement of Enduring Knowledge
ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)
* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

Local Assessment Target
ET3.1 (9-12)
Experience and implement the various areas in engineering and technology.

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET3.1 (9-12) Students demonstrate an understanding of the areas of engineering and technology by:		
1a. preparing a career portfolio of a …	○	○
1b. evaluating the connections within these areas …	○	○

Comments

Local Assessment Target
ET3.2 (9-12)
Evaluate the effectiveness of tools to measure, design, and implement specific technologies.

E & T GSE	**Differences Clear**	**Differences Not Clear**
ET3.2 (9-12) S tudents demonstrate an understanding of selecting appropriate tools by:		
2a. evaluating the effectiveness of various tool(s) …	○	○
2b. developing or improving a tool …	○	○

Comments

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (9-12)
Identify the factors affecting technological advances (e.g. social, economic, political, cultural, environmental) throughout history.

Comments

E & T GSE ET1.1 (9-12) Students demonstrate an understanding of the influences of technology by:	More Rigorous	As Rigorous	Less Rigorous
1a. analyzing factors related to the development…	○	○	○
1b. assessing the relationship between available resources …	○	○	○
1c. analyzing the evolution of factors affecting technological advances ….	○	○	○

Local Assessment Target
ET1.2 (9-12)
Analyze and explain advancements in technological systems and their impact on the world.

Comments

E & T GSE ET1.2 (9-12) Students demonstrate an understanding of the impacts of technology by:	More Rigorous	As Rigorous	Less Rigorous
2a. revising a current technological system and analyzing the global….	○	○	○
2b. modeling and evaluating the design of a technological system…	○	○	○

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.1 (9-12)
Evaluate the design and refine the design process used to solve a real world problem.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET2.1 (9-12) Students demonstrate an understanding of the attributes of the design process by:			
1a. identifying in depth criteria and constraints by developing…	○	○	○
1b. evaluating and finalizing the most appropriate design solution …	○	○	○
1c. creating a team and assigning roles to team members…	○	○	○

Local Assessment Target
ET2.2 (9-12)
Incorporate technological products, systems and their tools to achieve design solutions.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET2.2 (9-12) Students demonstrate an understanding of technological products and systems by:			
2a. selecting independently the proper tools …	○	○	○
2b. incorporating proper information, material selection…	○	○	○
2c. documenting, communicating, and evaluating processes …	○	○	○
2d. synthesizing information to develop possible solutions …	○	○	○

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.3 (9-12)
Refine the processes of research and development, invention and innovation, experimentation, and troubleshooting for the purpose of achieving an optimal design solution.

Comments

E & T GSE	**More Rigorous**	**As Rigorous**	**Less Rigorous**
ET2.3 (9-12) Students demonstrate an understanding of what is an optimal design solution by:			
3a. formulating a process to solve a real world problem …	○	○	○
3b. choosing appropriate materials to construct …	○	○	○
3c. evaluating and refining a complex design solution..	○	○	○
3d. presenting comparative simulations/ prototypes and defending the selected solution.	○	○	○

Question 3: Expected Rigor
Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's engineering and technology content and skills at that grade span?

Statement of Enduring Knowledge

ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)

* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

Local Assessment Target
ET3.1 (9-12)
Experience and implement the various areas in engineering and technology.

Comments

E & T GSE **ET3.1 (9-12) Students demonstrate an understanding of the areas of engineering and technology by:**	**More Rigorous**	**As Rigorous**	**Less Rigorous**
1a. preparing a career portfolio of a …	○	○	○
1b. evaluating the connections within these areas …	○	○	○

Local Assessment Target
ET3.2 (9-12)
Evaluate the effectiveness of tools to measure, design, and implement specific technologies.

Comments

E & T GSE **ET3.2 (9-12) Students demonstrate an understanding of selecting appropriate tools by:**	**More Rigorous**	**As Rigorous**	**Less Rigorous**
2a. evaluating the effectiveness of various tool(s) …	○	○	○
2b. developing or improving a tool …	○	○	○

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

Local Assessment Target
ET1.1 (9-12)
Identify the factors affecting technological advances (e.g. social, economic, political, cultural, environmental) throughout history.

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
ET1.1 (9-12) Students demonstrate an understanding of the influences of technology by:	**yes**	**no**
1a. analyzing factors related to the development…	○	○
1b. assessing the relationship between available resources …	○	○
1c. analyzing the evolution of factors affecting technological advances ….	○	○

Comments

Local Assessment Target
ET1.2 (9-12)
Analyze and explain advancements in technological systems and their impact on the world.

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
ET1.2 (9-12) Students demonstrate an understanding of the impacts of technology by:	**yes**	**no**
2a. revising a current technological system and analyzing ….	○	○
2b. modeling and evaluating the design of a technological system …	○	○

Comments

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.1 (9-12)
Evaluate the design and refine the design process used to solve a real world problem.

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
ET2.1 (9-12) Students demonstrate an understanding of the attributes of the design process by:	**yes**	**no**
1a. identifying in depth criteria and constraints by developing…	○	○
1b. evaluating and finalizing the most appropriate design solution …	○	○
1c. creating a team and assigning roles to team members…	○	○

Comments

Local Assessment Target
ET2.2 (9-12)
Incorporate technological products, systems and their tools to achieve design solutions.

E & T GSE	**Individual coherence within the Statement of Enduring Knowledge**	
ET2.2 (9-12) Students demonstrate an understanding of technological products and systems by:	**yes**	**no**
2a. selecting independently the proper tools …	○	○
2b. incorporating proper information, material selection…	○	○
2c. documenting, communicating, and evaluating processes …	○	○
2d. synthesizing information to develop possible solutions …	○	○

Comments

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET2 - Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. (ITEA STL 8-13)

Local Assessment Target
ET2.3 (9-12)
Refine the processes of research and development, invention and innovation, experimentation, and troubleshooting for the purpose of achieving an optimal design solution.

Comments

E & T GSE **ET2.3 (9-12) Students demonstrate an understanding of what is an optimal design solution by:**	**Individual coherence within the Statement of Enduring Knowledge**	
	yes	**no**
3a. formulating a process to solve a real world problem …	○	○
3b. choosing appropriate materials to construct …	○	○
3c. evaluating and refining a complex design solution..	○	○
3d. presenting comparative simulations/ prototypes and defending the selected solution.	○	○

Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual E & T GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these E & T GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?

Go back and review ALL the E & T GSEs *within* the Statement of Enduring Knowledge looking at them as a "GSE set**."** Does the set of GSEs *within* this statement of enduring knowledge have the potential to promote coherent instruction?

GSEs for this EK Statement coherent as a set

Yes ○ No ○

Statement of Enduring Knowledge

ET3 - The designed world community selects and uses the appropriate technology. (ITEA – STL 14-20)

* See Introduction for Areas - *medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing, and construction*

Local Assessment Target **ET3.1 (9-12)** *Experience and implement the various areas in engineering and technology.*			**Comments**
E & T GSE **ET3.1 (9-12) Students demonstrate an understanding of the areas of engineering and technology by:**	**Individual coherence within the Statement of Enduring Knowledge**		
	yes	**no**	
1a. preparing a career portfolio of a …	○	○	
1b. evaluating the connections within these areas …	○	○	

Local Assessment Target **ET3.2 (9-12)** *Evaluate the effectiveness of tools to measure, design, and implement specific technologies.*			**Comments**
E & T GSE **ET3.2 (9-12) Students demonstrate an understanding of selecting appropriate tools by:**	**Individual coherence within the Statement of Enduring Knowledge**		
	yes	**no**	
2a. evaluating the effectiveness of various tool(s) …	○	○	
2b. developing or improving a tool …	○	○	

Question #5: What engineering and technology content and skills are missing in these draft E & T GSEs? Where are there gaps in content and skills? This information is most essential for developing E & T GSEs for local curriculum, instruction and assessment.	
Relevant EK and GSEs **(Identify by EK and GSE number - ex. E&T 1, 1a)**	**Content/Concepts/Skills that need to be included** **(Please provide as much detail as possible)**

END OF GRADE SPAN 9-12

Appendix

The *Rhode Island K-12 Grade Span Expectations in Engineering and Technology* is a companion to the *Rhode Island K-12 Grade Span Expectations in Science*. As a total document, the *Rhode Island K-12 Grade Span Expectations in Science, Engineering and Technology* offer districts and schools clear images of the developmentally appropriate content and skills students should acquire by studying the natural world (earth and space science, life science, physical science) and the designed world (engineering and technology). By addressing both knowledge and application, together they help build the science literacy that is so critical for life in the 21st century. The *Rhode Island K-12 Grade Span Expectations in Science, Engineering and* Technology were developed and reviewed by Rhode Island teachers. The work in science was done in 2005 and the work in engineering and technology was done in 2006.

The Grade Span Expectations (GSEs) in Science are derived from the Assessment Targets developed for the state assessment in science through the New England Common Assessment Program (NECAP). By meeting these science GSEs, students should be well-prepared for the NECAP Science Assessment beginning operationally in Spring 2008 in Grades 4, 8 and 11.

The Grade Span Expectations in Engineering and Technology are for the purposes of local assessment. The Rhode Island High School Diploma System requires that students demonstrate proficiency in technology. The engineering and technology GSEs provide guidance to districts and schools as to these proficiencies.

The format of the *Rhode Island K-12 Grade Span Expectations in Science, Engineering and Technology* is such that the GSEs are specific derivations of broad assessment targets which, in turn, are extractions from even broader Statements of Enduring Knowledge. Stems link the targets to the expectations. See the next page for the Hierarchy Rhode Island of the K-12 Grade Span Expectations in Science, Engineering and Technology

The Statements of Enduring Knowledge:

- identify (or state) the fundamental knowledge/concepts of the domains
- cut across grade levels (learning is developmental/built upon over time)
- are of comparable grain size (larger than grain size of a single grade expectation)
- encompass, as a set, the essential learning for each domain
- imply topics of study (lead to focused instruction as identified in science, engineering and technology standards/benchmarks

The Assessment Targets:

- delineate the content and skills that is encompassed by the Statements of Enduring Knowledge
- are derived from/aligned with national and/or state science, engineering and technology standards
- specify the eligible content or fair game for state and local assessment in science and local assessment in engineering and technology

The K-12 Grade Span Expectations in Science, Engineering and Technology:

- are derived from/aligned with the state (science) and local (engineering and technology) assessment targets
- are written for grade spans K-2,3-4,5-6,7-8 and 9-11 in science because the NECAP Science Assessment is at the end of Grade 11
- are written for grade spans and for K-2,3-4,5-6,7-8 and 9-12 in engineering and technology

Hierarchy
draft Rhode Island of the K-12 Grade Span Expectations in Science, Engineering and Technology

DOMAIN (Physical Science)

Statement of Enduring Knowledge **within the** ***DOMAIN***

Assessment Target **for state assessment that addresses the** ***Statement of Enduring Knowledge*** **and in science** ***Unifying Theme(s). The Unifying Themes*** **are Inquiry - INQ, Nature of Science –NOS, Systems and Energy - SAE, Models and Scale - MOS, Patterns of Change - POC, and Form and Function - FAF)**

Stem **that links the** ***Assessment Target*** **to the** ***Grade Span Expectation***

Grade Span Expectation **derived from the** ***Assessment Target***

PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance

PS1 (K-4) INQ –1 Collect and organize data about physical properties in order to classify objects or draw conclusions about objects and their characteristic properties (e.g., temperature, color, size, shape, weight, texture, flexibility)

PS1 (K-2)–1 Students demonstrate an understanding of characteristic properties of matter by …

1a *identifying, comparing, and sorting objects by similar or different physical properties (e.g., size, shape, color, texture, smell, weight)*

****

DOMAIN (Engineering and Technology)

Statement of Enduring Knowledge **within the** ***DOMAIN***

Assessment Target **for local assessment that addresses the** ***Statement of Enduring Knowledge*** **(no** ***Unifying Theme*** **in Engineering and Technology)**

Stem **that links the** ***Assessment Target*** **to the** ***Grade Span Expectation***

Grade Span Expectation **derived from the** ***Assessment Target***

ET1 - Engineering and technology impacts the world and the growth of humankind (ITEA – STL 1-7)

ET1.1 (K -4) Demonstrate and identify reasons for the development of technology and its effects on humankind

ET1.1 (K-2) Students demonstrate an understanding of the nature of technology by…

1a. *investigating life without current technology (e.g. role-play use of the bucket brigade instead of a fire truck*).